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EXAMINER

BAYAT, ALI

ART UNIT

PAPER NUMBER

2625

DATE MAILED: 07/02/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/822,922

Applicant(s)

COX ET AL.

Examiner

Ali Bayat

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-20,32-36 is/are allowed.
- 6) ☒ Claim(s) 1-8,21-25 and 29-31 is/are rejected.
- 7) ☒ Claim(s) 26-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 29 recites the limitation "the articulated robot arm" in 1. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Jeon (U.S. 5,521,829).

In regard to claim 1, Jeon provides for an articulated robot arm (Fig.2 element 50 col.2 lines 37-39) for drawing or writing (Fig.2 element 60, col.2 lines 40-42) secured to a base (Fig.2 element 40 col.2 lines 37-39) and an image sensor (Fig.2 element 70, col.2 lines 40-45).

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon (U.S. 5,521,829) in view of Dalziel et al. (U.S. 5,579,444).

With regard to claim 2 Jeon provides an apparatus, wherein the articulated robot arm comprises a plurality of software-controlled mechanical actuators (Fig.2 element 20, col.2 lines 32-34). Jeon does not provide for robot arm comprises a plurality of software-controlled mechanical actuators. Dalziel provides for robot arm comprises a plurality of software-controlled mechanical actuators (col.11 lines 55-64). The prior art of Jeon and Dalziel are combinable because they are from the same field of endeavor (path tracing). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Dalziel ( col.11 lines 55-64) with the system and method of Jeon (vision-based controller). Because the invention of Dalziel provides in particular for the generation of signals to control the behavior of a robot arm so as to achieve accurate manipulation of objects with the aid of visual guidance col.1 lines 57-60 of Dalziel. However Examiner takes official notice, wherein the articulated robot arm comprises a plurality of software-controlled sensors. Because it is well known in the art.

As to claim 3, Jeon does not provide for an apparatus, wherein the articulated robot arm is capable of picking up and holding an automatically controlled writing implement. However dalziel provide for an apparatus, wherein the articulated robot arm is capable of picking up and holding an automatically controlled writing implement ( col.13 lines 20-27).

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In regard to claims 4 and 5 Jeon provides for a digitizer (Fig.2 element 70). Jeon does not provide expressly for a digital video camera, Dalziel provides for a digital video camera, wherein the digital video camera is attached to the articulated robot arm (Fig.1 element 12 col.10 lines 42-46).

As to claim 7 Jeon provides for a controller (Fig.2 element 20, col.2 lines 32-34), Jeon does not provide for the controller, wherein the controller is located within a separate computer and interfaced to the apparatus. Dalziel provides for the controller, wherein the controller is located within a separate computer and interfaced to the apparatus. Dalziel (Fig.1 element 9, col.10 lines 28-34).

4. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon (U.S. 5,521,829) in view of Dalziel et al. (U.S. 5,579,444), further in view of Drew et al. (U.S. 5,484,219).

As to claim 6, Jeon provides for the controller (Fig.2 element 20, col.10 lines 45-46). Jeon does not provide for , wherein the controller is located within the articulated robot arm. Drew provides for a controller which is located within the articulated robot arm ( col.3 line 65-col.4 line 3). The prior art of Jeon and Drew are combinable because they are from the same field of endeavor ( robotics). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Drew col.3 line 65-col.4 line 3) with the system and method of Jeon (vision-based controller). Because the invention of relates to robotics and in particular, to a

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new and useful compliancy joint for providing six degrees of compliance between a robot and a tool col.1 lines 7-11.

In regard to claims 8, Jeon as modified by dalziel provides for a controller (Fig.2 element 20, col.2 lines 32-34), Jeon does not provide for parts of the controller are located in a separate computer. Dalziel provide for parts of the controller are located in a separate computer (Fig.1 element 9, col.10 lines 45-46), and Drew provides for a controller which is located within the articulated robot arm ( col.3 line 65-col.4 line 3).

5. Claims 21-24 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon (U.S. 5,521,829) in view of Weinzimmer et al.( U.S. 6,681,151).

In regard to claim 21, Jeon provides for drawing a specialized target on a blank substrate ( Fig.2 elements 60 and 70, col. 2 lines 40-45). Jeon does not provide expressly for receiving video data from a digital video camera and performing a frame-by-frame analysis on the data to detect the presence of the specialized target.

Weinzimmer provides for receiving video data from a digital video camera ( Fig.1 element 150 and element 160, col.6 lines 46-52); and performing a frame-by-frame analysis on the data to detect the presence of the specialized target ( col.6 lines 46-52, note frame grabber, also col.10 lines 1-16). However the prior art of Jeon and Weinzimmer are combinable because they are from the same field of endeavor (path tracing). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Weinzimmer (video camera), with the system and method of Jeon. Because the invention of the invention of Weinzimmer provides a system and method for servoing a robot that is more robust than prior

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techniques and capable of accurately positioning workpieces held by robots onto a target location regardless of orientation within the field of view col.3 lines 10-15.

With regard to claim 22, Jeon does not provide for the orientation and the position of the substrate is determined. However Weinzimmer provides for determining the position of the substrate ( col.8 lines 33-36).

As to claims 23 and 24 see claim 21 above. They recite similar limitations as claim 21. hence they are similarly analyzed and rejected.

With regard to claim 30, Jeon provides for a digitizer 70 in Fig.1 . Jeon does not provide for a asymmetrical specialized target. However Weinzimmer provides for a asymmetrical specialized target ( Fig.2A elements 121 and 210).

In regard to claim 31, Jeon provides for a computer readable medium, the computer readable medium further including computer readable instructions encoded thereon for remembering the relative positions of the target and drawings on the substrate ( Fig.3 col.2 line 64-col.3 line 5).

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon (U.S. 5,521,829) in view of Weinzimmer et al.( U.S. 6,681,151), further in view of Taylor ( U.S. 6,741,738).

As to claim 25 Jeon provides for drawing a specialized target on a blank substrate (Fig.2 elements 60 and 70, col. 2 lines 40-45). Jeon does not provide expressly for receiving video data from a digital video camera and performing a frame-by-frame analysis on the data to detect the presence of the specialized target. Weinzimmer provides for receiving video data from a digital video camera (Fig.1

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element 150 and element 160, col.6 lines 46-52). Jeon as modified by Weinzimmer does not provide for the drawing or writing in the video frame is examined for determining whether a user marked the substrate. Taylor provide for the drawing or writing in the video frame is examined for determining whether a user marked the substrate ( see abstract ). The prior art of Jeon as modified by Weinzimmer are combinable, because they are from the same field of endeavor (mark recognition). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Taylor (optical mark recognition) with the system and method of Jeon (vision-based controller), because the invention of Taylor relates to a method and apparatus for automatic recognition of when a hand-drawn mark has been made within a particular region of a user-completed document such as a standardized test form col.1 lines 10-15.

7. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon (U.S. 5,521,829) in view of Weinzimmer et al.(U.S. 6,681,151), further in view of Dalziel et al.( U.S. 5,579,444).

With regard to claim 29 Jeon provides an apparatus, wherein the articulated robot arm comprises a plurality of software-controlled mechanical actuators (Fig.2 element 20, col.2 lines 32-34). Jeon does not provide for robot arm comprises a plurality of software-controlled mechanical actuators. Dalziel provides for robot arm comprises a plurality of software-controlled mechanical actuators (col.11 lines 55-64). The prior art of Jeon and Dalziel are combinable because they are from the same field of endeavor (path tracing). At the time of the invention, it would have been obvious to a person of



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ordinary skill in the art to incorporate the teaching of Dalziel ( col.11 lines 55-64) with the system and method of Jeon (vision-based controller). Because the invention of Dalziel provides in particular for the generation of signals to control the behavior of a robot arm so as to achieve accurate manipulation of objects with the aid of visual guidance col.1 lines 57-60 of Dalziel. However Examiner takes official notice, wherein the articulated robot arm comprises a plurality of software-controlled sensors. Because it is well known in the art.

#### Objected Claims

8. Claims 25-28 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### *Allowable Subject Matter*

9. The following is an examiner's statement of reasons for allowance: the prior art of Jeon (U.S. 5,579,444) provides for a path tracing apparatus for a robot, and in particular, to a path tracing apparatus for a robot which compares the actual path traced with the intended preset pat, in Fig.2 a robot 30 receives the control data of the intended path from the robot controller 20 and duplicates the path in accordance with the control data. The robot 30 comprises a robot body 10 which receives control data from the robot controller 20 and transmits the command data to execute the operation, further, the robot 30 comprises a robot arm 50 which is operated in accordance with the command data transmitted from the robot body 40. However the prior art of Jeon does not provide for detecting with an image sensor that a substrate is blank; drawing a

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specialized target on the substrate; and using the image sensor to find and recognized the target.

It is for this reason and in combination with all the other limitation in the claims, that claims 9-20 and 32-36 are allowable over the prior art of Jeon.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### Other Cited References

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2002/0071602 A1 to Nakano et al. is cited for component-mounting method and component-mounting apparatus.

US 2002/0056576 A1 to Ericson method, system and product for information management.

US patent 6,710,847 to Irie is cited for exposure method and exposure apparatus.

US patent 6,249,591 to Tullis is cited for method and apparatus for control of robotic grip or for activating contrast-based navigation.

#### Contact Information


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ali Bayat whose telephone number is 703-306-5915.

The examiner can normally be reached on M-Thur 9:00-7:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 703-3085246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ali Bayat   
Patent examiner  
Group Art Unit 2625  
6/24/04

  
TIMOTHY M. JOHNSON  
PRIMARY EXAMINER